

ComMA Syntax Overview: Interface Definition Language

```
import "IDemo.signature"
interface IDemo
variables
  int counter
  int receivedPing
  map<int,bool> rec
init
  rec := <map<int,bool>>{0 -> false, 1 -> false}
  counter := 0
```

Eclipse shortcuts for ComMA editors:

- Ctrl + Space: shows available code templates
- Ctrl + Shift + F: code auto format
- Alt + Shift + X, C: Run the monitoring

Map initialization

```
machine main {
  in all states {
    transition trigger: ping(int i) do: receivedPing := i
    transition do: pong(receivedPing + 1) next state: On
  }
```

Transitions included in all states

Triggers are actions of the client (commands and signals)

Non-determinism

```
  initial state Off {
    transition trigger: start
      do: reply(Result::OK) next state: On
    OR
    do: reply(Result::FAILED) next state: Off
  }
```

do: are actions of the server, e.g. replies and notifications

```
  state On {
    transition trigger: tick(int i) guard: counter < 5 do:
      counter := counter + 1
      reply(counter)
      next state: On
```

Transition with a trigger and a guard

Map update

```
    transition trigger: tick(int i) guard: counter >= 5 do:
      counter := counter + 1
      rec := rec [i -> true]
      if(i >= 0) then
        reply(i)
      else
        reply(-i)
      fi
      next state: On
```

If-then-else in transition body

Signature

commands

Result start
int tick(int i)
void stop

signals

ping(int i)

notifications

pong(int i)
bye(real r)

Notification with arbitrary value

```
    transition do:
      bye(*)
      counter := 0
      next state: Off
```

Transition with no trigger and no guard

Consult ComMA Help for other types of time rules

```
  }
}
timing constraints
TR1 signal ping -[.. 20.0 ms]-> notification pong
TR2 command start and reply(Result::OK) -> [10.0 ms .. 20.0 ms] between events
TR3 command start then command tick with period 100.0 ms jitter 10.0 ms
until command stop
```

data constraints

variables

int X

DR1 reply(X) to command tick where X >= 0